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December 9, 2014

Bechara Choucair, MD
Commissioner, Chicago Dept. of Public Health
333 South State Street, Rm. 200
Chicago, IL 60604

Subject: Review and Analysis of KCBX Terminals Company's Petition for Variance

Dear Dr. Choucair:

At the request of the City of Chicago, CDM Smith Inc. (CDM Smith) has reviewed and analyzed KCBX Terminals Company's (KCBX) Petition for Variance dated June 9, 2014. We have reviewed the variances sought as to six sections of the City of Chicago Department of Public Health's Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Material Piles, Municipal Code of Chicago, Chapter 11-4, Article II (the "Bulk Material Regulations"). In what follows, we have outlined CDM Smith's analysis of these variance requests, highlighting areas in which the requests for variance do not provide sufficient information to support the variance request. Moreover, based on CDM Smith's analysis, we believe that certain variance requests, if granted, would result in increased impacts on the surrounding community, as set forth in additional technical memoranda. We are separately providing to the City such technical memoranda summarizing additional evaluations supporting our review and analysis of the variance requests.

Requirements for Issuance of a Variance

A request for variance from the City of Chicago Bulk Material Regulations must include (as set forth in section 8.0(2) of the regulations):

- A. A statement identifying the regulation or requirement from which the variance is requested
- B. A description of the process or activity for which the variance is requested, including pertinent data on location, size, and the population and geographic area affected by, or potentially affected by, the process or activity
- C. The quantity and types of materials used in the process or activity in connection with which the variance is requested, as appropriate
- D. A demonstration that issuance of the variance will not create a public nuisance or adversely impact the surrounding area, surrounding environment, or surrounding property uses



- E. A statement explaining:
 - i. Why compliance with the regulations imposes an arbitrary or unreasonable hardship;
 - ii. Why compliance cannot be accomplished during the required time frame due to events beyond the Facility Owner or Operator's control such as permitting delays or natural disasters; or
 - iii. Why the proposed alternative measure is preferable
- F. A description of the proposed methods to achieve compliance with the regulations and a timetable for achieving that compliance, if applicable
- G. A discussion of alternate methods of compliance and of the factors influencing the choice of applying for a variance
- H. A statement regarding the person's current status as related to the subject matter of the variance request
- I. For any variance request from the enclosure deadline set forth in 6.0(5), the applicant must submit all of the information required in sections 8.0(2)(a) through (h) above and shall also submit 1) fugitive dust monitoring reports for the four months prior to the date of the variance application and 2) in the event that the variance is granted, monthly fugitive dust monitoring reports for the duration of the variance which shall be due fourteen (14) days following the end of the month which the report covers. The monthly fugitive dust monitoring reports required by this section shall be submitted in an electronic format as specified in the Variance.¹

In the review and analyses that follow, these requirements in Section 8.0(2) of the Bulk Material Regulations are referenced by letter.

In addition, under Section 8.0(3)(a), the City's criteria for reviewing variance requests of provisions of the Bulk Material Regulations include consideration of public comments, determination that an adequate compliance program is set forth and that reasonable alternatives for compliance have

¹ Because the variance requests under review do not involve a request for an extension of time for full enclosure, this condition/requirement is not relevant to our review.

been evaluated, and demonstration that any adverse impacts associated with the granting of a variance will be minimal.

General Observations Regarding the Variance Requests

We offer the following general observations regarding KCBX's petition for variance:

- **No Time Period Provided** – The request for variance does not propose time limits on the requested variances. Should the City grant variances, such variances should presumably be valid for a limited period of time, given the requirement for enclosure in Section 4.0 of the Bulk Material Regulations.
- **No Limitation of Material Subject to Variance Request** – The request for variance states that the current products handled at the site are coal and petroleum coke (hereinafter, petcoke). However, the variance requests are not specific to these substances. Any variances granted by the City should presumably be limited to the specific materials currently being managed at the site (coal and petcoke).
- **Sampling Cannot Confirm the Lack of Future Impacts** – KCBX states that soil and surface sampling in the area of the two terminals confirms that the terminals do not adversely impact the surrounding area, surrounding environment, or surrounding property uses as it is currently operated. While such sampling and analysis may indicate that the terminals have not in the past affected the soil or surfaces in the sampled area at levels that readily stand out from urban background conditions and/or at levels greater than the detection limit of the methods used, such sampling cannot determine that the terminals have not, do not now, or will not in the future adversely impact the surrounding area, surrounding environment, or surrounding property uses. In particular, soil and surfaces are not the entirety of the surrounding environment (which includes, for example, air), sampling of soil does not necessarily indicate the effect on all property uses (*e.g.*, the effect of deposition on clothes hung out to dry); and effects may be cumulative and simply not yet detectable using the methods adopted. CDM Smith has evaluated potential deposition of petcoke to soil in a technical memorandum and concludes that it would take many years to see a discernable effect from KCBX's operations in surface soil. Anecdotal evidence demonstrates previous impacts on the surrounding environment.²
- **Electron Microscopy Indicates the Presence of Petcoke** – Moreover, results of electron microscopy analyses of off-site dust indicate the likely presence of some petcoke particles, as can be expected from anecdotal site observations of dust emissions, and measurements of

² <http://www.chicagotribune.com/news/ct-koch-brothers-petcoke-delays-20140725-story.html#page=1>

PM₁₀ at on-site monitors. These results are described in detail in a separate Technical Memorandum. High sulfur, carbon rich-grains consistent with petcoke were identified in each of three dust samples collected at neighborhood locations to the east of the South Terminal. Additionally, low sulfur, carbon-rich grains consistent with coal and diesel soot were also identified in the samples.

- **Premise of Air Modeling Is Invalid** – KCBX also offers modeling analyses to support its contention that dust emissions from its facilities are acceptably small. However, the premise of the modeling study is not a valid means of assessing potential off-site impacts from the terminals. STi (KCBX’s consultant) attempted to reproduce the conditions and specific emission sources that led to observed, elevated PM₁₀ concentrations on April 12, March 31, March 9, and February 27, 2014 at downwind monitoring locations (as described in Exhibit 3 of the Petition for Variance). However, STi cannot be certain that it has identified the specific sources of dust emissions that caused the high PM₁₀ concentrations at the monitoring location. The actual distance that the responsible emission source(s) was from the monitor is not precisely known.

Importantly, modeling will predict the same concentration at the monitoring location from a small emission source close by or a much larger emission source located some distance away. For example, if the elevated dust concentrations were caused by bulldozing activities, the impacts could have been caused by a limited level of bulldozing close to the monitor, or a substantially larger amount of bulldozing a considerable distance away (or any other combination of sources at uncertain proximities). Recognizing this impossibility of isolating and identifying the precise emission sources, one cannot “validate” a modeling scenario that can be confidently used to model/extrapolate PM₁₀ impacts at residential locations (even assuming that only residential locations are relevant).

To be informative and rigorous, the STi analysis would have to be extended to include all possible combinations of sources of emissions on the site (in all possible combinations of locations) that could potentially have resulted in the observed measurement(s), and demonstrate that every such combination of sources resulted in acceptably small concentrations. Moreover, such modeling would also have to be extended to every distance and direction from the site.

- **Presented Results of Air Modeling are Misleading** – Modeling results presented in Exhibit 3 of the Petition for Variance indicate very low PM₁₀ impacts at residential locations. Our attempts at recreating STi’s model predictions indicate higher impacts at residential locations than the results depicted in the figures in Exhibit 3. In the case of the March 9, 2014 model simulation, it appears that the model predicts the same incremental PM₁₀ concentration at a

residential location to the northeast of the South Terminal as is predicted at the NE monitoring site. The implication in STi's Figure 4 (Exhibit 3) that PM₁₀ impacts due to KCBX are essentially zero is thus misleading. Additional details of our review of STi's dispersion modeling studies are provided in a supporting Technical Memorandum.

- **KCBX's Monitoring Data are Relevant to Determining Compliance with NAAQS**– KCBX notes that of the days monitored, 98% of the 24-hour air monitoring daily results were within the PM₁₀ NAAQS standard. This is not sufficient to meet the NAAQS standard which requires that the PM₁₀ standard not be exceeded more than once per year on average over three years (indeed, if anything, it demonstrates a violation). KCBX also notes that it is inappropriate to determine compliance with the NAAQS for PM₁₀ using on-site monitors, but then contradicts itself by stating that the on-site monitors will continue to be used to ensure compliance with all rules and regulations. Because the monitors are not located off-site, KCBX argues that the data cannot be used to legally determine compliance with NAAQSs. However, lacking appropriate monitors in off-property locations, the on-site, peripheral monitoring locations must be viewed as surrogates and representative of locations in the vicinity just beyond the fence line.

- **Additional Dust Monitors Are Necessary to Adequately Monitor Neighborhood Impacts** – KCBX points to the peripheral fence line monitoring program as the principal means of justifying each variance request. Each of the present monitoring programs for both the North and South Terminals lacks a monitoring station directly between the terminal and the closest residential area. Although not the most prevalent local wind directions, winds sometimes do blow from east to west, as well as west to east, directly toward the nearest residential areas to the North and South Terminals. CDM Smith's independent analysis of the wind direction data identified both easterly and westerly components to wind patterns.³ Surface wind directions may be modified by the presence of the bulk material piles, which constitute a significant aerodynamic influence. The proximity of residences calls for the addition of exposure-based PM₁₀ monitoring stations, which should be located between the nominal middle of the North Terminal's west perimeter and the closest residences to the west, and the South Terminals' east perimeter and the closest neighboring homes to the east. Monitoring stations in these areas are necessary for the purpose of gauging impacts to the closest residential locations. At present, it is possible for dust releases from certain portions of the

³ CDM Smith's analysis of resultant wind direction data indicates that wind blows from the west toward the residences approximately 4.9% of the time at the north terminal and 4.1% of the time at the south terminal, based on on-site meteorological monitoring by KCBX as reported on the EPA petcoke website (<http://www2.epa.gov/petroleum-coke-chicago/kcbx-fenceline-air-monitoring-data#meteo>).

KCBX property to migrate off-site toward residential areas and not be detected by any of the existing monitors.

- **Utility of Expanded Filter-Based PM₁₀ Sampling** – Because winds vary in direction both within 24 hour periods and even within hourly periods, it is possible and even likely that KCBX emissions contribute to PM₁₀ concentrations at all on-site monitoring locations irrespective of the primary wind direction. In addition, regional and local sources can contribute to background concentrations of PM₁₀. Unfortunately, it is difficult to separate or apportion PM₁₀ sources. KCBX currently collects PM₁₀ composition data at two of its monitors each third day. These data could be useful in identifying and differentiating PM₁₀ sources using, for example, elemental carbon as a marker constituent. Everyday collection of filter-based data at all of the KCBX monitoring sites, along with subsequent speciation analysis of components, might provide additional information useful in identifying and apportioning ambient PM₁₀.

Request for Variance as to Sections 3.0(6) and 6.0(3) – Conveyors

We offer the following review and analysis regarding KCBX's request for variance with respect to conveyors:

- **Variance Request Combines Two Separate Variance Requests** – This variance request actually contains two independent requests to (1) not cover 8 of its 55 conveyors until they are removed from service, and (2) extend the time for compliance until March 31, 2015 for the remaining conveyors. As such, each request should separately meet the requirements of the Bulk Material Regulations Section 8.0(2) A through H. However, the KCBX request mixes the requirements for the two requests in such a way that it is not always entirely clear whether various statements apply to one, the other, or both. In the following discussion, we refer to requests (1) and (2) to distinguish them.
- **Location Is Not Sufficiently Identified** – Requirement B states that the location of the process or activity for which the variance is requested must be identified. KCBX's discussion of the location for variance request (1) makes reference to Exhibit 4, and this exhibit is the only document that would allow identification of the location of the conveyors that are the subject of this variance request. Exhibit 4 is included in the submittal at low resolution making it difficult to identify the locations of the requested variance. There is no attempt made to identify the location of the process or activities for variance request (2).
- **Population and Geographic Area Are Not Described** – Requirement B also stipulates that the population and geographic area affected by, or potentially affected by, the process or activity for which the variance is requested be described. KCBX states that no population or geographic area would be affected by a grant of this variance request. This is not responsive

to the requirement. The requirement does not apply to the population and geographic area affected by grant of the variance, it applies to the population and geographic area affected by the *process or activity for which the variance is requested*. Undoubtedly the population and geographic areas affected by variance request (1) and (2) differ, since (1) applies only to the North Terminal. Requirement B therefore has not been met for either request (1) or (2). The discussion of plans for the North Terminal is irrelevant, since plans can change at any time, and no time certain is provided for the claimed termination of use of the conveyors of the North Terminal. The claim that “KCBX’s use of conveyors decreases greatly during winter months” is also irrelevant to Requirement B, and is moreover not supported by any documentation (e.g., of contract requirements) or binding assurance. The available information on throughput in the last months of 2013 available in a KCBX response to EPA (<http://www2.epa.gov/sites/production/files/2014-03/documents/koch-mineral-114-response-20130131-plus-attachments.pdf>) suggests that throughput will be entirely controlled by available modes of transport, not specifically by date.

- **Quantity and Types of Materials are Not Detailed** – Requirement C states that the quantity and types of materials used in the process or activity for which the variance is requested must be set forth in detail. This requires KCBX to identify the quantities of material (and specific types of material) handled by the conveyors for which the variance is requested. KCBX does not identify the quantities handled by the affected conveyors for either request (1) or (2). The types of material currently handled are described as coal and petcoke, but no limitation on the types of material that might be handled during the (unstated) duration of any variance is assured.
- **No Demonstration of No Adverse Impact** – Requirement D calls for a demonstration that issuance of the variance will not create a public nuisance or adversely impact the surrounding area, surrounding environment, or surrounding property use. For request (1), KCBX describes the use of spray bars and other dust suppression techniques to reduce fugitive dust from conveyor operations, and states that the existing dust suppression techniques would ensure that the use of these conveyors without covers would not adversely impact the surrounding area. Dust suppression techniques reduce fugitive dust emissions from conveyors; however, KCBX’s discussion in the variance request fails to demonstrate that there will be no creation of a public nuisance or adverse impact, as required by the Bulk Material Regulations. Operations at the two terminals have resulted in a public nuisance or adverse impacts in the past. What is required for request (1) is a demonstration that the operation of these 8 conveyors will not contribute to public nuisance or adverse impacts in future. Since quantities of material may change with time (and have not been specified, see Requirement C above), the demonstration must show that regardless of past conditions, operations will not contribute to public nuisance or adverse impacts in the future. Such

demonstration requires that precise specifications be provided for operator actions, for example the conditions under which the conveyors would be shut down, and demonstration that operation up to such conditions does not create a public nuisance or adverse impact. KCBX provides no evidence under Requirement D for request (2), so fails to provide the required demonstration.

- **Insufficient Documentation of Hardship, Need for an Extension, or Demonstration that the Variance Is Preferable** – Requirement E requires an explanation of why compliance with regulations imposes an arbitrary or unreasonable hardship, why compliance cannot be accomplished by the required timeframe, or why the proposed alternative is preferable. Here KCBX explicitly makes separate statements for requests (1) and (2).

For request (1) KCBX states that the conveyor dust suppression system is effective and material moved by conveyors does not adversely affect the surrounding area. However, effectiveness has not been conclusively demonstrated (see the General Observations above). Further, KCBX states that covering the conveyors would provide little or no protection from potential fugitive dust emissions. It is not true that covering the conveyors would provide *no* protection. In an evaluation of fugitive emissions from integrated iron and steel plants, Bohn, *et al.* (1978) estimate that covering conveyors offers 70% to 99% control efficiency for emissions from the conveyors.⁴ Possibly KCBX is arguing that covering the conveyors would not provide further protection beyond the dust suppression measures that are already in place, but KCBX provides no demonstration that this would be the case; and in fact covering the conveyors would definitely provide further protection during times (such as temperatures below 25 °F) when the current measures cannot operate. KCBX also states that it plans to cease use of these conveyors, but provides no time certain for this eventuality.

KCBX further does not explain why the requirement for covers on the conveyors imposes an arbitrary or unreasonable hardship. KCBX states that initial estimates for the cost of covering these eight conveyor systems would be well over \$1 million and would take over one year to complete. No details of this cost estimate are provided, however, nor is there any explanation of why this cost would impose an “arbitrary or unreasonable hardship” beyond the self-serving statement that “these costs are unreasonable, in light of the effectiveness of the dust suppression system that is already in place.” Simply stating the cost in the absence of any comparison does not show how that cost imposes an arbitrary or unreasonable hardship. Also, KCBX provides no details of the estimates of the timeframe for installing covers on each

⁴ Bohn R, Cuscino T Jr., Cowherd C Jr. 1978. *Fugitive emissions from integrated iron and steel plants*. Midwest Research Institute, 425 Volker Boulevard, Kansas City, Missouri 64110, for U.S. EPA, ORD, Washington, D.C. 20460. EPA-600/2-78-050. March 1978. Page 6-3, Table 6-1.

of the eight conveyors, and no explanation or even assertion that the required timeframe “due to the engineering, permitting, and construction required” extends beyond the compliance deadline due to events beyond KCBX’s control.

For request (1), KCBX makes no attempt to demonstrate that the proposed alternative is preferable.

For request (2), KCBX argues that the six month deadline imposes an arbitrary and unreasonable hardship. The explanation of times required for custom design, manufacture, and installation does not assert that compliance cannot be accomplished due to events beyond KCBX’s control, nor is there any argument that the proposed alternative is preferable.

KCBX states that if additional support or structural engineering is required for the conveyors, that would extend the time required to complete the installation, but this is a hypothetical and no explanation is provided demonstrating that additional support or structural engineering is required, nor any statement that such delay is due to events beyond KCBX’s control.

KCBX also states that all conveyors should have been kept in service through October 31, 2014 to meet the obligations of KCBX’s current contracts. Details of current obligations should have been provided, demonstrating that the conveyors must be kept in service through this period. Demonstration should also have been provided that these obligations were entered into prior to KCBX receiving notice of the Bulk Material Regulations.

- **No Discussion of Alternate Methods of Compliance** – Requirement G requests a discussion of alternate methods of compliance. With respect to variance request (1), KCBX claims to be unaware of any alternate methods of complying with the requirement to cover the 8 conveyors at the North Terminal. There is no discussion of replacing the conveyors with covered versions rather than modifying those currently in use, or replacing them with alternatives. KCBX has not provided information regarding whether it has considered alternate methods that would meet the stated intent of Section 3.0(6) to reduce or eliminate fugitive dust emissions to the maximum extent practicable, for example by increasing the monitoring and spraying requirements, adding more spray bars, operating spray bars continuously, using foam to top materials on the conveyors, or stopping operation at lower wind speeds than currently done.
- **No Statement of Current Status** – KCBX’s response to Requirement H requiring a statement regarding the current status as related to the conveyors references pages 8-9 of the variance request, but these pages do not contain any statement as to the current status of the

conveyors as related to 3.0(6) and 6.0(3), the subject matter of the variance request. Assuming the subject conveyors are uncovered, they are not in compliance.

- **No Specific Time Limit** – KCBX’s conclusion does state that the variance is sought “until its bulk material handling activities are transitioned to the South Terminal.” No specific time limit is included in the variance request.

Request for Variance as to Section 5.0(2) – Height Limit

We offer the following review and analysis regarding KCBX’s request for variance with respect to height limit:

General Comment Regarding Emissions from Higher Piles –Based on CDM Smith’s analysis, emissions, and consequently impacts to ambient air, will increase as pile height increases. Higher emissions from higher piles can be expected simply due to the fact that wind speeds increase with height in the atmosphere (see the CDM Smith technical memorandum on pile height for a detailed discussion). This has an important implication in interpreting the supplemental modeling study developed by STi (KCBX’s consultant). The STi study, which models PM₁₀ concentrations due to emissions from pile heights of 30 feet and 45 feet, finds no substantial differences in impacts between the two pile height scenarios, but the STi study assumes exactly the same emissions in each scenario and does not account for the potentially larger emissions from the higher pile scenario. Our review finds that, for equivalent dust control efforts, emissions can be expected to increase with pile height due to increases in wind speeds with height and related factors (see our Technical Memorandum on pile height). Moreover, it is stated in the STi report that windblown erosion from stockpiles accounted for only 7% of the monthly total emissions, although no details are provided of the methodologies used to reach this conclusion. However, the other sources of dust are also sensitive to wind speed. Insofar as those sources are located at elevations that depend on pile height (*e.g.* all load-in/load-out operations), higher storage piles will result in other sources being at higher elevation, subject to higher wind speeds, and producing higher dust emissions.

- **Location, Population, and Geographic Area Are Not Described** – Requirement B – KCBX’s response is non-responsive. KCBX provides no description of the process or activity for which the variance is requested and, in particular, provides no discussion on the location and size of the population or geographic area affected by, or potentially affected by, the process or activity. Depending on criteria used to identify potentially affected locations, changes in the allowed pile height could result in changes in the location and size of the population and geographic area affected, or potentially affected by KCBX processes and activities. Irrespective, both the North and the South Terminals have neighborhoods in close proximity. At a minimum, these neighborhoods must be considered as local populations of interest.

KCBX provides additional information in response to Requirement B, including information about applying water to 60 foot piles, an engineering evaluation of the feasibility of a 30 foot pile height, and information about contractual obligations. While some of this information may be relevant to the variance request as a whole, this information is non-responsive to the requirements of Section 8.0(2)b of the Bulk Material Regulations.

- **No Limitation on Products Handled** – Requirement C – While KCBX states that the terminals handle only coal and petcoke, the variance request is not limited in the products that might be handled. If such a limitation is intended, KCBX should explicitly limit the variance request to coal and petcoke to comply with Requirement C. Furthermore, the response offers no indication of the quantities of materials involved in the variance request. The response to Requirement B discusses pile heights, but does not specify the quantities of material involved. No other discussion of quantities is provided, so the request is non-responsive to Requirement C.
- **Inadequate Demonstration of No Adverse Impact** – Requirement D – KCBX's response is not responsive to the requirement for a demonstration that issuance of the variance will not create a public nuisance or adversely impact the surrounding area, surrounding environment, or surrounding property uses. KCBX asserts that the dust suppression systems currently used would ensure that no nuisance or adverse impacts would be created. What is needed, however, is a demonstration based on data or reliable modeling that the increase in pile height from 30 feet to 45 feet would not result in greater exposure to dust emissions from the KCBX facilities. Based on CDM Smith's evaluation (as described in our Technical Memorandum on pile height), dust emissions are likely to increase as pile height increases.
- **No Demonstration of Arbitrary or Unreasonable Hardship** – Requirement E – KCBX states that compliance with the pile height requirements of the regulations imposes an arbitrary and unreasonable hardship, but provides no specific evidence of the nature of the hardship.
- **No Timeframe for Achieving Compliance** – Requirement F - These statements do not indicate how KCBX plans to come into compliance with the regulations, nor offer a timeframe for achieving that compliance. Such statements would presumably indicate that the South site is going to be a covered facility so that height would not matter, and give the timeline for that to occur. The response should have, for example, included a definitive statement as to how compliance would be achieved at the North site.
- **Limited Discussion of Alternate Methods of Compliance** – Requirement G – KCBX states that the only alternative method to comply with the pile height limitation would be to turn

away customers who have already entered into contracts with KCBX. KCBX does not evaluate any other alternative methods.

- **No Discussion of Efforts to Meet the 30 Foot Maximum Pile Height** – In providing a response to Requirement H, KCBX states that maximum pile heights have been voluntarily reduced to 45 feet. This does not, however, meet the regulation. In response to Requirement G, KCBX should have described the efforts that have been made to attain the 30-foot maximum pile height or to minimize the time that any heights above 30 feet are present.
- **No Compliance Program** – In its conclusion regarding the request for a pile height variance, KCBX states that they “propose a definite compliance program.” This program, however, is not a compliance program, since the proposed 45 foot pile height is out of compliance. KCBX could have offered a definite program for coming into compliance.
- **Discussion of Impacts of Winter Weather on Transportation Modes** –KCBX offers that winter weather or low water levels preventing certain transportation modes is an impediment to complying with the pile height requirements of the regulations, but the relevance of the absence of these transportation modes is not discussed.

Request for Variance as to Section 5.0(5)(B) – Dust Suppressant System

We offer the following review and analysis regarding KCBX’s request for variance with respect to winter operations of the dust suppressant system:

- **Unclear Impacts of Cold Temperatures on Dust Suppression System** – Requirement B – KCBX states that because of heated buildings for the storage of water trucks at both terminals and a heated control valve room at the south site, water and chemical stabilizers can be applied down to temperatures of 25 degrees. It is unstated whether this temperature limit applies to both the trucks and the pole-mounted cannons at both terminals. KCBX also states, “Below 25 degrees Fahrenheit, ice begins to accumulate on the spray nozzles.” It is unstated whether these are the spray nozzles on the trucks, the water cannons, or both.
- **The Scope of the Variance Request is Unclear** – Requirement B – According to the Fugitive Dust Plan, the spray bars are heat traced at least for product unloading (it is not stated whether this is also true for transfers and loading), so that water or chemical stabilizers may continue to be applied through the spray bars at low temperatures. The variance is currently requested broadly, which would exempt the application of water or chemical stabilizers through the spray bars also. The variance request could, for example, have been limited to just the water cannons and water trucks. If the spray bars are also intended to be covered by the variance, they could have been discussed.

- **No Discussions of Limitations of Chemical Stabilizers** – Requirement B – While chemical stabilizers might encrust the product and reduce or prevent dust emissions from the piles, that would only be true if the piles are undisturbed, so the crust is unbroken. There is no guarantee provided that piles would be undisturbed. The presence of the crust would have practically no effect on dust emissions during load-out operations.
- **No Demonstration of Moisture Content Necessary to Prevent Dusting** – Requirement B – “KCBX would refuse to transload any product during such conditions [temperatures less than 25 degrees Fahrenheit] that does not meet the definition of ‘Moist’ under the Rules.” If the product is frozen, then the presence of moisture as determined by air drying (the ASTM method for petcoke as specified by Rule 3.0(7)) may not suppress dust emissions. Specifying that the product is “moist” may be inadequate. Moisture content is a measureable quantity, and KCBX must demonstrate what moisture content is necessary to prevent dusting events. Assuming it is possible to specify a threshold moisture content, KCBX must also propose a program for adequate testing and reporting.
- **Location, Population, and Geographic Area Are Not Described** – Requirement B – KCBX is non-responsive to the requirement. No indication of the location, size, and the population and geographic area affected by the process or activity is discussed. This requires an evaluation of the potentially affected areas and populations while no suppression is operating (*e.g.*, emissions without water/chemical stabilizer control), the periods this may occur, and the areas and populations affected by those emissions.
- **Non-Responsive Regarding the Quantity of Material** – Requirement C – The discussion is non-responsive. No indication is given of the quantity of material involved.
- **Further Investigation of Potential for Dusting Events** – Requirement D – KCBX states that the variance would be applied infrequently and to a reduced quantity of product. The frequency is not necessarily relevant, since even one occasion may create a public nuisance or adversely affect the surrounding area. The quantity of product is not necessarily relevant to Requirement D – the relevant factor is the amount of dust emission that will occur, which will primarily depend on the load-in/load-out rates. Without any dust suppression, the dust emission rate is potentially very high. In the fugitive dust plan (p. 3, footnote 2), KCBX indicates that it will be relying on portable water cannons on the water trucks for dust suppression during the November through March period (and using those trucks only when temperatures exceed 25 degrees Fahrenheit). Thus, there will almost certainly be times when no dust suppression is available. Additionally, KCBX has not demonstrated that the number of water trucks at its disposal will be sufficient to provide the volume of water necessary for dust suppression. KCBX has also not demonstrated that the use of portable water cannons at ground-level is equivalent in effectiveness to using the elevated, fixed pole

water cannon system. The frequency of coincidence of high winds and cold temperatures could be a useful gauge of the potential for dusting events in the absence of dust suppression. If such events are possible/likely, it may be necessary to limit or cease operations and material movement during cold weather periods.

- **No Demonstration of No Adverse Impact** – Requirement D – KCBX provides a statement, that the variance will not create a public nuisance or adverse impact, but provides no demonstration that the variance will not adversely impact surrounding areas. Moreover, there is no indication in the variance request that alternate methods will be applied to minimize potential adverse effects. If no such alternate methods are specified, there is no assurance of no public nuisance.
- **Non-Responsive to Requirement E** – KCBX offers no explanation of why this requirement imposes an arbitrary or unreasonable hardship on the petitioner, no explanation of why compliance cannot be accomplished during the required timeframe, and no explanation of why the proposed alternative is preferable. The request is therefore non-responsive to Requirement E.
- **No Discussion of Proposed Methods to Achieve Compliance** – Requirement F – No discussion of proposed methods to achieve compliance is offered, though presumably this ultimately will be by total enclosure. It is unclear that KCBX has investigated all possible alternatives. Coal-fired power plants have for many years been required to control dust emissions from coal piles during winter months, and may have developed best management practices that can be adapted at KCBX.⁵
- **Limited Discussion of Alternate Methods of Compliance** – Requirement G – KCBX provides no basis for the statement that they are not aware of any way to make water trucks operate reliably below 25 degrees Fahrenheit. There is no discussion of heating the water supplied to the trucks to allow them to operate in cold temperatures. Fire trucks can operate reliably at temperatures below 25 degrees Fahrenheit. There is no discussion regarding why water trucks cannot operate reliably at such temperatures.

KCBX also does not discuss alternate methods of other aspects of winter dust suppression. If only relatively small quantities of product are involved, perhaps consideration could be given to using a tent to cover the section of the terminal involved. Consideration could be given to heating the water trucks or applying an artificial snow cover to the piles. Any other

⁵ Proceedings of the fugitive dust issues in the coal use cycle specialty conference. Air Pollution Control Association. April 1983. Pittsburgh, PA.

alternatives such as movable or fixed windbreaks could be evaluated to mitigate potential problems.

KCBX does not provide evidence that alternative methods of cold weather dust control have been explored and evaluated. A cursory web search indicates that dust suppression products may be available that are effective at temperatures well below 25°F (*e.g.*, see <http://ipachem.net/products.php?bp=2394>).

Additionally, the potential lack of dust suppression measures suggests a need for enhanced ambient air monitoring. Process-based, localized monitoring could be considered to ensure that excessive dust emissions are not generated by activities with reduced dust control efforts. For example, mobile dust monitors could be placed in areas of bulk material movement or disturbance to evaluate the magnitude of dust emissions during cold weather conditions.

- **No Analysis of Limited Conditions** – In its conclusion, KCBX states, “Granting the variance would not cause adverse impacts because the conditions under which the variance would apply are limited.” However, there is no analysis provided of these “limited” conditions, so it is not possible to determine that granting the variance would not cause adverse impacts. It could be possible for nuisance conditions to arise during even a single event or instance when dust suppression could not be applied.
- **No Definition of “Effective Management”** – In its conclusion, KCBX states, “In addition to encrusting the stockpiles, if KCBX employees determine that the potential for emissions could not be effectively managed, the activity would be ceased until such time when emissions could be effectively managed.” This method for attempting to achieve compliance is not previously discussed. It should have been included in the responses to Requirements D and G, and possibly also in response to E and F. A definition should have been provided for “effective management” as well as a demonstration that such management prevents adverse effects.

Request for Variance as to Section 5.0(5)(C) – Dust Suppressant System

We offer the following review and analysis regarding KCBX’s request for variance with respect to suspending disturbance of bulk material piles during dust suppressant system maintenance or other inoperable circumstances:

- **Define “Suitable Alarms” Used to Shut Down Activity** – Requirement B – One of the conditions KCBX suggests is monitoring activity and responding to visible dust, including shutting down the activity, if necessary. This condition could specify what other responses are proposed, other than shutting down the activity. KCBX could also respond to suitable

alarms from the on-site monitors, where “suitable” must be demonstrated to prevent public nuisance or adverse impacts. The proposal to shut down activity after the observation of visible dust could specify how rapidly the shutdown would occur, and demonstrate this is adequate to prevent public nuisance or adverse impacts.

- **No Discussion of Quantities of Materials** – Requirement C – KCBX is non-responsive to the requirement that the quantities of materials involved be described. KCBX does state that the variance would impact only “a small percentage of the Product at the Facility.” The “small percentage” impacted should have been specified. Without specification, the quantities involved could correspond to the maximum transloading rate of KCBX’s operations, since outages could occur at any time, and this could correspond with the highest potential for dust emissions. Moreover, even if the quantity of material involved is small, this quantity may be the only material subject to the handling and conveyance activities likely to result in dust emissions.
- **No Demonstration of No Adverse Impact** – Requirement D – KCBX’s one sentence response to this requirement does not provide a demonstration that the variance will not create a public nuisance or adversely impact the surrounding area. Such a demonstration should, for example, evaluate whether operating under the variance would provide the same protection as normal operation under the regulations.
- **Non-Responsive to Requirement F** – KCBX does not state that the variance would comply with the regulations, and does not provide a timetable for achieving compliance (which would presumably be the timetable for total enclosure). KCBX does not demonstrate that the variance would provide the same protection as normal operation under the regulation.
- **Response to Requirement H Is Not Explicitly Part of the Fugitive Dust Plan** – “Currently, KCBX monitors all of its operations for visible dust emissions and responds in the event of such emissions, including halting activities if necessary.” This statement is not explicitly part of the Fugitive Dust Plan, which covers only visible emissions from the baghouse of the rotary rail dump enclosure, and the potential for visible emissions beyond the property line.
- **Exceptions to Dust Suppression Are Not Described** – Requirement H – KCBX states, “In addition, whether or not a piece of dust suppression equipment is inoperable, KCBX already applies additional water or chemical stabilizer by other means (e.g., a water truck) as needed to address potential dust emissions.” Water or chemical stabilizer is not applied by KCBX in cold weather. Exceptions to this statement should have been described.

Request for Variance as to Section 5.0(6)(D) – Runoff Management, Grading

We offer the following review and analysis regarding KCBX's request for variance with respect to runoff management and grading:

- **Insufficient Detail of Grading and Drainage** – Requirement B – KCBX references Exhibits 5 and 6 to demonstrate that both terminals are “graded in such a way as to ensure proper drainage.” Exhibit 5 is a diagram of proposed construction improvements. It is unclear whether KCBX is representing that Exhibit 5 is an accurate diagram of in-place improvements. Exhibit 6 is a similar diagram of proposed improvements. Both exhibits are provided at too low a resolution to discern details of the proposal. Neither provides details of the cited permits, or provides grading detail.
- **No Information on Quantity of Material** – Requirement C – KCBX states that the quantity of product on-site at any one time varies depending on time and customer obligations. No information is provided on the quantity of material involved. KCBX did not state whether the variance request is solely for coal and pet coke or is for all potential materials.
- **Provide Additional Demonstration of No Adverse Impact** – Requirement D – KCBX states, “Any pooling of water does not create air emissions – rather, it serves to help prevent potential air emissions from the area in which the pooling occurs.” While this may be true while water is present, when the pools dry out, the top layer of the resulting materials will likely be fine dust that is prone to produce air emissions (as the smaller particles will suspend longer in the ponded water, and hence remain at the top upon drying). KCBX did not demonstrate that this does not create a public nuisance or adverse impact.

KCBX has also not discussed potential impacts to groundwater caused by the infiltration of water through the storage piles. Ponded water potentially provides hydraulic head that can lead to more rapid rates of infiltration. Leaching tests may be appropriate for examining the potential for chemicals to leave petcoke and contaminate water systems.

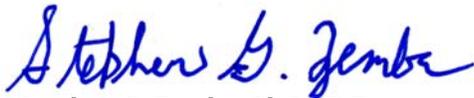
There are also additional aspects of ponded water that have not been evaluated. The regulation does not directly prohibit water-filled ruts created by vehicles, but issues such as track-out and mosquitoes should be considered.

- **Limited Consideration of Alternatives** – Requirement E – KCBX states that the only way to create a grade that does not change would be to pave the stockpile area. It is unclear whether attempts have been made to consider other alternatives. No indication is provided that a cost/benefit analysis has been performed for paving the area.

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- **No Engineering Estimates for Cost and Schedule** – Requirement E – KCBX states that paving the stockpile area would cost millions of dollars and that completing such work would take at least a year. These statements are not demonstrated by engineering estimates.

Sincerely,



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